IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: Gary RENSBERGER		Atty. Docket No.:	03797.00219
Serial No.:	10/068,979	Group Art Unit:	2675
Filed:	February 11, 2002	Examiner:	Ming Hun Liu
For:	Method and Apparatus for Cursor Smoothing by Matching Cursor With Refresh Rate of the Display	Confirmation No.:	8669

APPEAL BRIEF

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Sir:

This is an Appeal Brief in accordance with 37 C.F.R. § 41.37 in support of Appellant's October 19, 2004, Notice of Appeal. Appeal is taken from the final Office Action mailed July 26, 2004. Please charge any necessary fees in connection with this Appeal Brief to our Deposit Account No. 19-0733.

REAL PARTY IN INTEREST
37 C.F.R. § 41.37(c)(1)(i)

The owner of this application, and the real party in interest, is Microsoft Corporation.

RELATED APPEALS AND INTERFERENCES
37 C.F.R. § 41.37(c)(1)(ii)

There are no related appeals or interferences.

STATUS OF CLAIMS

37 C.F.R. § 41.37(c)(1)(iii)

Upon entry of the accompanying Amendment After Final canceling claims 23-28, claims 1-6, 8, and 29 would be pending. Of these, claims 1-4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,589,893 to Gaughan et al. ("Gaughan") in view of U.S. Patent No. 5,185,597 to Pappas et al. ("Pappas"); and claims 5, 6, 8, and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gaughan in view of Pappas, and further in view of U.S. Patent No. 5,327,528 to Hidaka et al. ("Hidaka").

Appellant hereby appeals the rejection of claims 1-6, 8, and 29.

STATUS OF AMENDMENTS

37 C.F.R. § 41.37(c)(1)(iv)

The most recent Amendment was filed February 5, 2004, which has been entered. No amendments prior to that Amendment have been filed. Also, an Amendment After Final Rejection accompanies this Appeal Brief and has yet to be entered as of the filing of this Appeal Brief.

SUMMARY OF CLAIMED SUBJECT MATTER

37 C.F.R. § 41.37(c)(1)(v)

In making reference herein to various portions of the specification and drawings in order to explain the claimed invention, Appellants do not intend to limit the claims; all references to the specification and drawings are illustrative unless otherwise explicitly stated.

The invention relates to smoothing of cursor movement on a computer display. Specification, e.g., p. 1, lns. 3-4.[1] One aspect of the invention is directed to receiving from a pointing device an indication of an amount of movement of an operation instrumentality of the pointing device in a first direction. Specification, e.g., p. 2, lns. 18-19. A predetermined portion of the amount of movement in the first direction is reported to a data input device having a display. Specification, e.g., p. 2, lns. 19-21. A remainder of the amount of the movement in the first direction is reported in at least one subsequent reporting step. Specification, e.g., p. 2, lns. 21-22. The amount of time between report times for the smaller movement amounts may be no larger than an amount of time between refreshes of the display. For example, referring to the illustrative embodiment shown in Figure 1, a receiver 102 receives movement data from a pointing device 100 and reports at a rate at 125 Hz, resulting in the amount of time between report times being 1/125 second, or 8 milliseconds. Specification, e.g., p. 4, lns. 22-24. In that same embodiment, the display refresh rate is 70 Hz, resulting in an amount of time between refreshes being 1/70 second, or about 14 milliseconds. Figure 1; Specification, e.g., p. 1, lns. 9-10. Thus, in this case, 8 milliseconds is no larger than 14 milliseconds.

Also, because in the above embodiment the pointing device reports its movements at 40 Hz, the original movement data is reported by the pointing device at regular intervals of 1/40 second, or every 25 milliseconds. Figure 1; Specification, 4, lns. 21-22. This is longer than the above-mentioned regular interval between display refreshes (14 milliseconds), which in turn is

1 All references to the specification refer to the number of lines actually containing text and do not count blank lines. For example, on page 1, the title is at line 1, and the sentence beginning "Pointer or cursor movement on a raster-scanned image..." begins at line 6.

longer than the above-mentioned regular interval between smaller movement reports (8 milliseconds).

Referring to the illustrative embodiment of Figure 3A, the receiver 102 has a movement receiver 300 to receive position data from the pointing device 100, a partial movement determiner 302 to divide the data such that a portion of the movement in at least a first direction will be reported, and a reporter 304 that send the position data to a computer 104. Specification, e.g., p. 5, lns. 28-32.

Referring to the illustrative embodiment of Figure 3B, the functions described with reference to Figure 3A may be performed using an RF receiver 308, a processor 310, various memory 312, 314, and a USB output 316. Specification, e.g., p. 6, lns. 1-6. In addition, referring to Figure 4, the movement determine 302 may include a divider 400 and a subtractor 402. Specification, e.g., p. 6, lns. 12-20.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

37 C.F.R. § 41.37(c)(1)(vi)

Claims 1-4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,589,893 to Gaughan et al. ("Gaughan") in view of U.S. Patent No. 5,185,597 to Pappas et al. ("Pappas").

Claims 5, 6, 8, and 29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Gaughan in view of Pappas, and further in view of U.S. Patent No. 5,327,528 to Hidaka et al. ("Hidaka").

ARGUMENT
37 C.F.R. § 41.37(c)(1)(vii)

A. ***Rejections Under 35 U.S.C. § 103(a) Based on Gaughan and Pappas***

1. Claims 1-4

Claim 1 is directed to a method of smoothing cursor movement. The claimed method includes reporting to a data input device having a display, at a reporting time, a predetermined portion of an amount of the movement in a first direction; and reporting, in at least one subsequent reporting step, a remainder of the amount of the movement in the first direction, wherein an amount of time between report times is no larger than an amount of time between refreshes of the display. For example, report times may occur every 8 milliseconds (at 125 Hz), while display refreshes may occur every 14 milliseconds (at 70 Hz). *See, e.g.*, specification, p. 4, lns. 22-24; Figure 1.

As the Examiner correctly indicates, Gaughan fails to teach or suggest that the amount of time between report times is no larger than the amount of time between refreshes of a display, as required by claim 1.[2] The Examiner instead relies on Pappas, referring to col. 2, lns. 35-45. This portion of Pappas discloses that the refresh rate of a display should be 60 Hz to avoid flicker. In Pappas, refreshing the display is to write the frame buffer on to the display. The frame buffer in Pappas contains a bit map of the entire screen to be displayed. Although the screen to be displayed may include a cursor among other display elements, there is nothing in Pappas that

2 Confusingly, on page 5 of the Final Office Action, the Examiner also mentions that claim 1 is *anticipated* by Gaughan, referring to the 4.15 millisecond period in Figure 5, parts A and B. The 4.15 millisecond period in Gaughan is the period in over the start bit (either 0 as in part A, or 1 as in part B) is transmitted. Gaughan, col. 3, lns. 30-38. The start bit, however, does not itself impart an indication of an amount of movement as claimed, and thus is irrelevant to the claim feature in question.

compares movement amount report intervals with the display refresh rate. Indeed, the proposed combination of Gaughan and Pappas would, at best, result in the system of Gaughan having a display refresh rate of 60 Hz. Even in such a proposed configuration, the amount of time between display refreshes would have been 1/60 second, or about 16.7 milliseconds, and the amount of time between report times in Gaughan would have been 82.4 milliseconds (see Figure 5D of Gaughan). Thus, even in such a proposed system the amount of time between report times (82.4 milliseconds) would have been far larger than the amount of time between display refreshes (16.7 milliseconds), and so such a system would not have had all of the features of claim 1.

The Examiner further argues that this claim feature is inherent to Pappas, because "the information reporting time obviously would have to be shorter than the refresh rate. Inherently, information must be supplied prior to the use of the information. . . . Obviously, data must arrive before it can be properly displayed." Office Action, pp. 2 and 5. The Office Action appears to be saying that cursor position information inherently must be received before that information can affect the displayed cursor. This is nonetheless irrelevant to whether the amount of time *between* report times is no larger than the amount of time *between* refreshes of a display as claimed.

Because Pappas does not relate a report rate with a refresh rate, there could be any of a number of possible relationships between these two rates. For instance, Pappas could have a higher report rate than a refresh rate. The fact that a certain characteristic *may* be present in the prior art is not sufficient to establish the inherency of that result or characteristic. MPEP 2112. Inherency may not be established by probabilities or possibilities. MPEP 2112; *In re Robertson*,

49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). The allegedly inherent characteristic must *necessarily* flow from the teachings of the applied prior art. MPEP 2112; *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). In the case of Pappas, it is not necessary, and therefore not inherent, that the amount of time between report times is no larger than the amount of time between refreshes.

In addition, the Examiner does not provide a valid motivation to combine Gaughan and Pappas as proposed, and so the rejection fails to make out a *prima facie* case of obviousness. The Examiner states that, "without synchronizing the cursor and display refresh rates, a smooth cursor movement that Gaughan wishes to achieve would be impossible." Final Office Action, p. 3. This is simply not true. Without conceding that the unmodified system of Gaughan operates properly at all, it is neither necessary nor inherent that the reporting rate and the display refresh rate be synchronized in Gaughan. Moreover, as previously discussed, neither Gaughan nor Pappas teach, suggest, or even imply that the reporting rate and the display refresh rate should be synchronized. Thus, the basic premise behind the Examiner's stated motivation is simply not shown to be in the prior art.

Accordingly, neither Gaughan nor Pappas, either alone or in combination, teach or suggest that an amount of time between report times is no larger than an amount of time between refreshes of a display, as required by claim 1. Accordingly, Appellant submits that claim 1 is allowable.

Claims 2-4, which depend from claim 1, are also allowable over Gaughan and Pappas, either alone or in combination, for at least those reasons that claim 1 is allowable, and further in view of the additional features recited therein.

B. ***Rejections Under 35 U.S.C. § 103(a) Based on Gaughan, Pappas, and Hidaka***

1. Claim 5

Claim 5 depends from claim 1, and is therefore also allowable over Gaughan and Pappas, either alone or in combination, for at least those reasons that claim 1 is allowable, and further in view of the additional features recited therein. Moreover, the introduction of Hidaka fails to cure the deficiencies of the proposed Gaughan-Pappas combination. In particular, Hidaka fails to teach or suggest that an amount of time between report times is no larger than an amount of time between refreshes of the display, as recited in claim 1. Thus, for good reason, the Examiner does not assert Hidaka for such a teaching. Therefore, claim 5 is allowable over Gaughan, Pappas, and Hidaka, either alone or in any combination.

In addition, claim 5 recites deriving a first reporting value from a first value received from the pointing device representing an indication of an amount of movement in the first direction, the first reporting value being less than an original value of the first value received from the pointing device; and subtracting the first reporting value from the first value to update the first value to indicate a remaining amount of movement in the first direction not yet reported, and wherein a first one of the reporting steps reports the first reporting value and the remaining amount of movement is reported in the at least one subsequent reporting step. The Examiner correctly acknowledges that not all of these features are taught or suggested in Gaughan or Pappas, and so the Examiner relies on Hidaka, arguing that as exemplified by Hidaka "it can be seen that movement algorithms are rather common and several dividing algorithms exist within the art." Final Office Action, p. 3.

Hidaka simply fails to teach or suggest what is acknowledged to be deficient from Gaughan and Pappas. Indeed, the Examiner does not even assert that the above-mentioned claim features are particularly taught by Hidaka, instead merely asserting that movement division algorithms are generally known. Moreover, the Examiner's reliance on Hidaka is misleading and improper for several reasons.

First, Hidaka is not concerned with division of movement. Hidaka discloses partitioning a *graphics object*, not cursor movement as suggested by the Examiner. Although Hidaka does discuss moving a cursor while constrained on the contour of the graphics object, Hidaka, col. 1, lns. 8-12; col. 7, lns. 11-15, it is the *graphics object* (not the cursor movement) that is divided into one or more segments, where each segment is divided into a plurality of intervals. Hidaka, col. 3, lns. 30-32; col. 7, lns. 44-45; Fig. 15A. Also, while the mouse cursor in Hidaka can move in a "discontinuous mode," this simply means that the cursor will jump from one graphics object interval to the other as it moves along the graphics object, instead of continuously along the contour of the graphics object. Hidaka, col. 7, ln. 44 to col. 8, ln. 30; Figs. 15B-15D. Again, this has nothing to do with dividing cursor movements into smaller cursor movements.

Appellant suspects that the Examiner may also be thinking of the following text in Hidaka:

> FIG. 6 shows the relationship between the mouse moved on a desk and the position pointed to on the screen. The movement of the mouse on the desk is divided to [sic] small parts and thereby reduced to a series of numerous linear movements on a two-dimensional plane. The individual linear movements are mapped on the display screen.

Hidaka, col. 5, lns. 26-32. This excerpt from Hidaka merely refers to how a conventional mouse works, without smoothing: the physical movements of the mouse on the desk surface are

sampled at a high rate as small linear movements, which in Hidaka's case are the original mouse movements. However, this excerpts has nothing to do with partitioning original movements into a plurality of smaller movements.

The second reason that the Examiner's reliance on Hidaka is misleading and improper, is that the Examiner does not propose to modify Gaughan or Pappas in any particular manner taught by Hidaka. Instead, the Examiner is apparently using Hidaka as an exemplary reference to show that movement division algorithms are common and varied. Even if this were true, such an argument is improper and does not make out a *prima facie* case of obviousness, because the rejection sets forth neither a particular combination of features in the prior art nor a motivation to add Hidaka to the Gaughan-Pappas mix.

For at least these further reasons, claim 5 is allowable over Gaughan, Pappas, and Hidaka, either alone or in any combination.

2. Claim 6

Claim 6 depends from claims 1 and 5, and is therefore also allowable over Gaughan and Pappas, either alone or in combination, for at least those reasons that claims 1 and 5 are allowable, and further in view of the additional features recited therein. Moreover, the introduction of Hidaka fails to cure the deficiencies of the proposed Gaughan-Pappas combination. In particular, Hidaka fails to teach or suggest that an amount of time between report times is no larger than an amount of time between refreshes of the display, as recited in claim 1. Nor does the Examiner assert Hidaka for such a teaching. Therefore, claim 6 is allowable over Gaughan, Pappas, and Hidaka, either alone or in any combination.

In addition, claim 6 recites deriving a second reporting value from a second value received from the pointing device representing an indication of an amount of movement in the second direction, the second reporting value being less than an original value of the second value received from the pointing device; and subtracting the second reporting value from the second value to update the second value to indicate a remaining amount of movement in the second direction not yet reported, wherein the first one of the reporting steps reports the second reporting value and the remaining amount of movement is reported in the at least one subsequent reporting step. The Examiner correctly acknowledges that these features are neither taught nor suggested in Gaughan or Pappas, and instead relies on Hidaka, arguing that as exemplified by Hidaka "it can be seen that movement algorithms are rather common and several dividing algorithms exist within the art." Final Office Action, p. 3.

Hidaka simply fails to teach or suggest what is acknowledged to be deficient from Gaughan and Pappas. Indeed, the Examiner does not even assert that the above-mentioned claim features are particularly taught by Hidaka, instead merely asserting that movement division algorithms are generally known. Moreover, the Examiner's reliance on Hidaka is again misleading, improper, and insufficient for the reasons discussed above in connection with claim 5, and so the rejection also does not make out a *prima facie* case of obviousness.

For at least these further reasons, claim 6 is allowable over Gaughan, Pappas, and Hidaka, either alone or in any combination.

3. Claim 8

Claim 8 depends from claim 1, and is therefore also allowable over Gaughan and Pappas, either alone or in combination, for at least those reasons that claim 1 is allowable, and further in

view of the additional features recited therein. Moreover, the introduction of Hidaka fails to cure the deficiencies of the proposed Gaughan-Pappas combination. In particular, Hidaka fails to teach or suggest that an amount of time between report times is no larger than an amount of time between refreshes of the display, as recited in claim 1. Nor does the Examiner assert Hidaka for such a teaching. Therefore, claim 8 is allowable over Gaughan, Pappas, and Hidaka, either alone or in any combination.

In addition, claim 8 recites that the predetermined portion of the amount of movement reported to the data input device is limited to a predefined maximum value, and the remaining amount of movement that is subsequently reported includes an amount of movement in excess of the predefined maximum value. The Examiner correctly acknowledges that these features are neither taught nor suggested in Gaughan or Pappas, and instead relies on Hidaka, arguing that as exemplified by Hidaka "it can be seen that movement algorithms are rather common and several dividing algorithms exist within the art." Final Office Action, p. 3.

Hidaka simply fails to teach or suggest what is acknowledged to be deficient from Gaughan and Pappas. Indeed, the Examiner does not even assert that the above-mentioned claim features are particularly taught by Hidaka, instead merely asserting that movement division algorithms are generally known. For example, the Examiner does not address whether Hidaka teaches movement division in connection with the claimed predefined maximum value of claim 8 (Hidaka does not). Moreover, the Examiner's reliance on Hidaka is again misleading, improper, and insufficient for the reasons discussed above in connection with claim 5, and so the rejection also does not make out a *prima facie* case of obviousness.

For at least these further reasons, claim 8 is allowable over Gaughan, Pappas, and Hidaka, either alone or in any combination.

4. Claim 29

Independent claim 29 is directed to an apparatus for smoothing cursor movement. C*laim 29 calls for three different regular intervals, and recites their lengths relative to one another:* a first regular interval (at which original mouse movement amounts are received), a second regular interval (at which smaller mouse movements are output), and a third regular interval (display refresh interval). As claimed, the lengths of the three regular intervals are related to one another as follows:

SECOND REGULAR INTERVAL (smaller mouse movements)	<	THIRD REGULAR INTERVAL (display refresh)	<	FIRST REGULAR INTERVAL (original mouse movements)

The Examiner correctly acknowledges that this claim feature is absent from Gaughan[3] and Pappas, and attempts to rely instead on Hidaka, arguing that Hidaka demonstrates that "partitions can be made in several different ways and sizes." Final Office Action, p. 4. Again, and for similar reasons discussed above with regard to claim 23, such an argument is insufficient and improper, and fails to address the particular claim feature discussed above.

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3 Again, it is unclear what the Examiner's position is. On Page 6 of the Final Office Action, the Examiner implies that claim 29 is *anticipated* by Gaughan alone, referring to Figure 5. The Examiner attempts to compare the claimed first interval with parts A+B+C of Figure 5. This is incorrect; indeed, Gaughan is silent as to the first interval. Instead, parts A and B show alternate start bit configurations (Gaughan, col. 3, lns. 30-38), and part C shows an entire X,Y report including a start bit (Gaughan, col. 3, lns. 40-45). Thus, part C includes either part A or part B (depending upon the start bit value), and so it is nonsensical to sum the intervals of parts A, B, and C as proposed.

First, as previously discussed above with regard to claim 5, Hidaka fails to teach or suggest partitioning movement amounts into smaller movement amounts at all, much less "in several different ways and sizes" as alleged by the Office Action. Instead, Hidaka deals with partitioning of a graphics object.

Second, claim 29 recites a particular relationship between the three sets of regular intervals. Even if it were assumed for argument's sake that Hidaka disclosed partitioning in several different ways and sizes, Hidaka still fails to teach, not just *any* relationship between the intervals, but specifically the particularly claimed relationship between the three regular intervals as required by claim 29.

Third, the Examiner does not provide any motivation *at all* to combine Gaughan and Pappas with Hidaka as proposed, and so the rejection again fails to make out a *prima facie* case of obviousness. The Examiner merely states that "Gaughan does not specifically state that the partitions must be of the same size or different size, however as demonstrated by Hidaka, the partitions can be made in several different ways and sizes." Final Office Action, p. 4. This is not even an attempt to meet the Examiner's burden of at least stating some motivation to modify Gaughan and Pappas or to combine them with Hidaka.

Fourth, and as discussed above with regard to claim 1, the Examiner does not provide a valid motivation to combine Gaughan and Pappas as proposed, and so the rejection fails to make out a *prima facie* case of obviousness. The Examiner states that, "without synchronizing the cursor and display refresh rates, a smooth cursor movement that Gaughan wishes to achieve would be impossible." Final Office Action, p. 3. This is simply not true. Without conceding that Gaughan operates as intended at all, it is not necessary that the reporting rate and the display

refresh rate be synchronized in Gaughan. Moreover, as previously discussed, neither Gaughan nor Pappas teach, suggest, or even imply that the reporting rate and the display refresh rate should be synchronized. Thus, the basic premise behind the Examiner's stated motivation is simply not found in the asserted art.

For at least these reasons, it is submitted that claim 29 is allowable over Gaughan, Pappas, and Hidaka, either alone or in any combination.

CONCLUSION

For all of the foregoing reasons, Appellant respectfully submits that the final rejection of claims 1-6, 8, and 29 is improper and should be reversed.

Respectfully submitted,
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CLAIMS APPENDIX

37 C.F.R. § 41.37(c)(1)(viii)

1. (Previously Presented) A method of smoothing cursor movement, the method comprising:

receiving, from a pointing device, an indication of an amount of movement of an operation instrumentality of the pointing device in a first direction;

reporting to a data input device having a display, at a reporting time, a predetermined portion of the amount of the movement in the first direction; and

reporting, in at least one subsequent reporting step, a remainder of the amount of the movement in the first direction,

wherein an amount of time between report times is no larger than an amount of time between refreshes of the display.

2. (Original) The method of claim 1, wherein at least two reporting steps are performed for each one time the receiving step is performed.

3. (Original) The method of claim 1, wherein:

the step of receiving further comprises receiving, from the pointing device, an indication of an amount of movement of the pointing device in a second direction,

the step of reporting to the data input device having the display further comprises reporting to the data input device, at the reporting time, a predetermined portion of the amount of the movement in the second direction, and

the step of reporting in at least one subsequent reporting time further comprises reporting, in said at least one subsequent reporting step, a remainder of the amount of the movement in the second direction.

4. (Original) The method of claim 1, wherein at least three said reporting steps are performed to report the amount of movement.

5. (Original) The method of claim 1, wherein a first value, received from the pointing device, represents the indication of an amount of movement in the first direction, the method further comprising:

deriving a first reporting value from the first value, the first reporting value being less than an original value of the first value received from the pointing device;

subtracting the first reporting value from the first value to update the first value to indicate a remaining amount of movement in the first direction not yet reported,

wherein a first one of the reporting steps reports the first reporting value and the remaining amount of movement is reported in said at least one subsequent reporting step.

6. (Original) The method of claim 5, wherein a second value, received from the pointing device, represents the indication of an amount of movement in the second direction, the method further comprising:

deriving a second reporting value from the second value, the second reporting value being less than an original value of the second value received from the pointing device;

subtracting the second reporting value from the second value to update the second value to indicate a remaining amount of movement in the second direction not yet reported,

wherein the first one of the reporting steps reports the second reporting value and the remaining amount of movement is reported in said at least one subsequent reporting step.

7. (Canceled).

8. (Original) The method of claim 1, wherein the predetermined portion of the amount of movement reported to the data input device is limited to a predefined maximum value and the remaining amount of movement that is subsequently reported includes an amount of movement in excess of the predefined maximum value.

Claims 9-28. (Canceled).

29. (Previously Presented) An apparatus for smoothing cursor movement, comprising:

an input configured to receive first data representing a series of original movement amounts of a pointing device at a first regular interval;

a processor configured to partition the original movement amounts into smaller movement amounts; and

an output configured to output second data representing a series of the smaller movement amounts at a second regular interval to a computer having a display, the display being refreshed at a third regular interval,

the second regular interval being shorter than the first and third regular intervals, the first regular interval being longer than the third regular interval.

EVIDENCE APPENDIX

37 C.F.R. § 41.37(c)(1)(ix)

None

RELATED PROCEEDINGS APPENDIX

37 C.F.R. § 41.37(c)(1)(x)

None